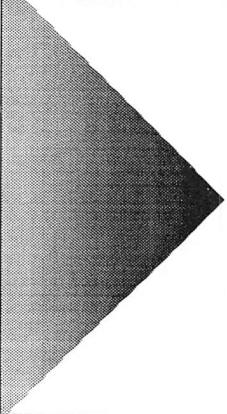




MODULAR CIRCUIT TECHNOLOGY™





MCT-FDC-ED

2.88Mb Floppy Controller

Owner's Reference Guide



MODULAR CIRCUIT TECHNOLOGY

Notices

Copyright

© 1993 MODULAR CIRCUIT TECHNOLOGY

This publication is protected by copyright and all rights are reserved. No part of it may be reproduced or transmitted by any means or in any form, without prior consent in writing from MODULAR CIRCUIT TECHNOLOGY.

Trademark Acknowledgments

IBM, PC, XT, AT, PS/2 and OS/2 are registered trademarks of International Business Machines Corporation.
Microsoft, MS, MS-DOS and Windows are registered trademarks of Microsoft Corporation.

Contents

| | |
|------------------------|----|
| Notices | ii |
| Manual Overview | iv |
| Conventions Used | v |
| Introduction | vi |
| What's Included | vi |

1 - Configuring and Installing the MCT-FDC-ED

| | |
|------------------------------------|------|
| Setting Jumpers | 1-2 |
| Configuring the MCT-FDC-ED | 1-3 |
| J4 ROM BIOS Address | 1-3 |
| J4 Primary/Secondary | 1-4 |
| Connecting the Floppy Drives | 1-4 |
| Installing the MCT-FDC-ED | 1-6 |
| Using the Setup Routine | 1-5 |
| Connecting Tape Drives | 1-11 |

2-Technical Reference and Troubleshooting

| | |
|---|-----|
| Formatting Diskettes | 2-2 |
| Microsoft Windows and the MCT-FDC-ED | 2-2 |
| Floppy Drive Letter Assignments by MS-DOS | 2-3 |
| 2.88Mb "Smart" Drives | 2-4 |
| Technical Specifications | 2-5 |

Manual Overview

The following chapter summaries will help you identify the chapters you need to read. For best results, however, we recommend that you read the entire manual before installing and using your MCT-FDC-ED.

Overview (iv)

Configuring and Installing the MCT-FDC-ED (1-2)

Conventions Used and Introduction.

Instructions for configuring the jumpers and step-by-step instructions for installing the MCT-FDC-ED in your system.

Technical Reference and Troubleshooting (2-2)

Technical Information and Common Problems answered.

Conventions Used

Bold Type usually indicates a heading. If bold type is used outside a heading, it is used to highlight a term of importance. Definitions for these terms can be found in the glossary.

Bold Roman Type is used to show responses from the computer, or commands to the computer.

Keys on the keyboard are enclosed in "brackets", e.g., represents the Delete key, <A> represents the capital letter "A", etc. Combination keystrokes run together without spaces, i.e., <Ctrl><Alt>.

Hexadecimal numbers are followed by a lower-case "h", as in 80h or A23h.



Indicates a special note on a related subject.



Indicates an area where caution should be used.



Indicates an area where damage could occur.



Indicates static precautions should be used.



Indicates a helpful hint.

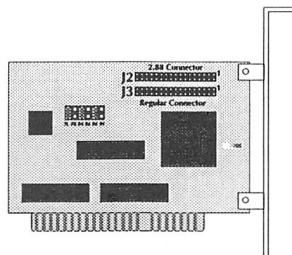
Introduction

The MCT-FDC-ED is a floppy controller capable of controlling 360K, 720K, 1.2Mb, 1.44Mb and 2.88Mb floppy drives. This controller allows you to assign any floppy drive as the A: boot drive or any other drive letter during a setup procedure from the keyboard. It allows you to boot from a 2.88Mb drive and supports the QIC-80 tape drive format with a 1Mb transfer rate, eliminating the need for some tape controllers.

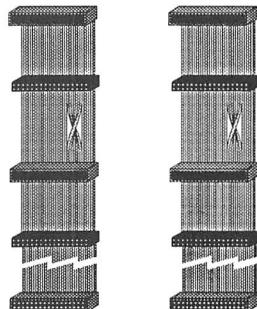
What's Included?

The following items are included with the MCT-FDC-ED:

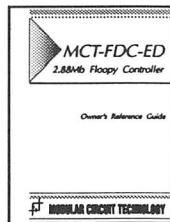
MCT-FDC-ED

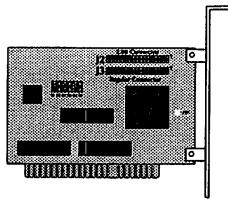


Cables



Manual



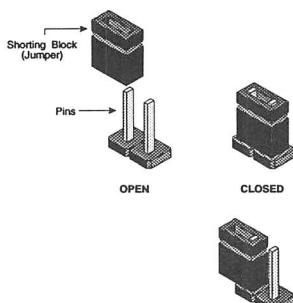


Configuring and Installing the MCT-FDC-ED

Contents

- Setting Jumpers
- Configuring the MCT-FDC-ED
- J4 ROM BIOS Address
- J4 Primary/Secondary Floppy Controller
- Connecting Floppy drives
- Installing the MCT-FDC-ED
- Using the Setup Routine
- Connecting Tape Drives

Setting Jumpers

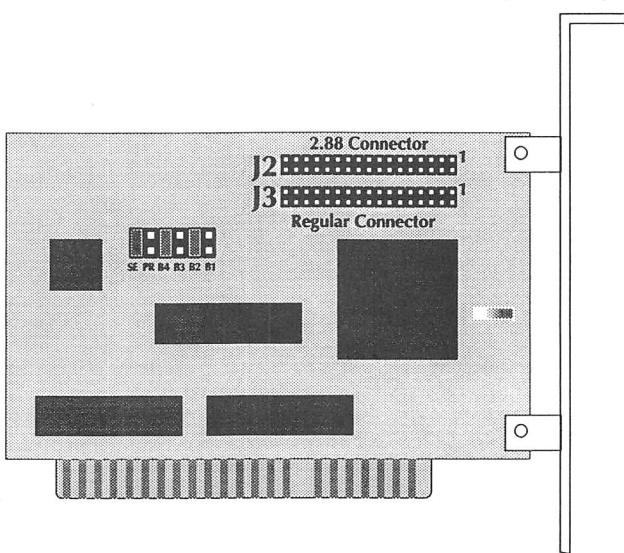


Jumpers are shorting blocks that connect two points together mechanically and electrically. When a jumper is installed, it is said to be "Closed." If a jumper is not installed, it is said to be "Open."

 To keep from losing your jumpers, place unused jumpers over only one pin. This will be considered an "Open" configuration, but your jumper will be there if you need it later.

For most applications, the default jumper settings of the MCT-FDC-ED will be compatible with your system. If the default addresses are in common with other cards installed in your system, you may need to change the default settings. The MCT-FDC-ED has the following default address settings:

ROM BIOS Address----DC000h-DDFFh
Floppy I/O Address--Secondary 370-377
 (Primary 3F0-3F7)



Use the following table to record the I/O base address and ROM BIOS address of cards already installed in your system. Refer to your documentation for information on these addresses. A diagnostic program (e.g., QAPlus by DiagSoft or "MSD" in Windows 3.1) can be useful in determining the ROM BIOS address.

| | CARD 1 | CARD 2 | CARD 3 | CARD 4 | CARD 5 |
|------------------|--------|--------|--------|--------|------------|
| Adaptor | | | | | MCT-FDC-ED |
| I/O Base Address | | | | | |
| ROM BIOS Address | | | | | |

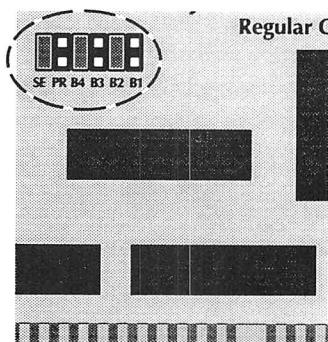
Configuring the MCT-FDC-ED

If the addresses being used by the MCT-FDC-ED are already in use by other cards installed in your system, you will need to change the default settings.

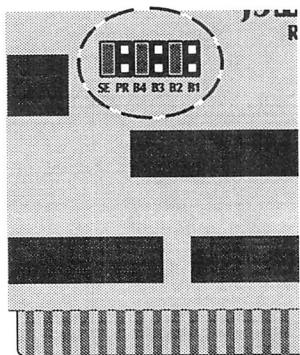
J4 Jumpers B1-B4 BIOS Address Configuration

The jumpers at location J4 determine what address the ROM BIOS will reside. The default ROM BIOS address is **DC000-DDFFF**. The table at the bottom left lists the possible ROM BIOS addresses and jumper configurations.

| ROM BIOS ADDRESS CONFIGURATION | | | | |
|--------------------------------|--------|--------|--------|-------------|
| B1 | B2 | B3 | B4 | Address |
| CLOSED | OPEN | CLOSED | OPEN | C8000-C9FFF |
| CLOSED | OPEN | OPEN | CLOSED | E0000-E1FFF |
| OPEN | CLOSED | CLOSED | OPEN | D8000-D9FFF |
| OPEN | CLOSED | OPEN | CLOSED | DC000-DDFFF |



J4
PR,SE
Primary or Secondary
Controller



The MCT-FDC-ED can be used as a Primary or Secondary controller. If it is to be used as the only floppy controller in the system, then it should be set for Primary (PR). If it is going to be used in conjunction with another floppy controller, then it should be set for Secondary (**SE--default**).



If another floppy controller is present in the system, (e.g., on a floppy/hard controller) it is recommended that all floppy drives be connected to the MCT-FDC-ED and the other floppy controller be left "as is", with no attempt made to disable it. The BIOS on the MCT-FDC-ED will manage all the drives using the Setup process described later.

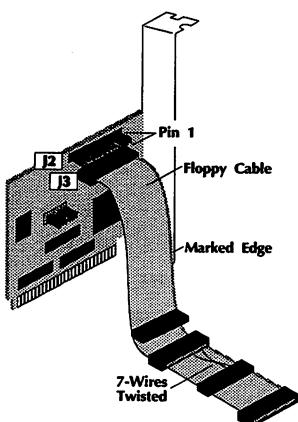
Connecting the Floppy Drives

Turn off all power to the system and unplug the power cable from its source. Using your case's documentation, open the case and locate an empty 8 or 16-bit expansion slot. If necessary, remove the current floppy controller, or disconnect the cabling from the current floppy controller.

Connecting the Cables

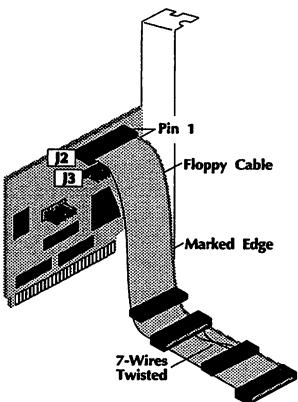
There are two 34-pin cables supplied with the controller for installing up to four floppy drives in your system. Connector J3 on the controller is for connecting standard drives (360K, 720K, 1.2Mb, 1.44Mb), and J2 is for connecting 2.88Mb drives and/or standard drives. Any drive connected to the controller may be specified as A: and be used as the boot drive.

Using Standard



Connect the standard drives to one of the 34-pin ribbon cables with one drive connected to the end of the cable with 7 wires twisted, and another drive connected to the middle of the cable. See the illustration at the left. Because the floppy drive cable has 7-wires twisted, the drive select settings on both drives should be on the second position (e.g., DS1 if the settings begin with DS0). Refer to your drives documentation for instructions on setting the Drive Select.

Using 2.88 Drives



Both 2.88 drives and standard drives can be connected to connector J2. If a 2.88Mb drive is connected to the end of the 34-pin ribbon cable where 7-wires are twisted, it will be the first drive on the cable. If a drive is connected to the middle of the cable it will be the second drive. See the illustration at the left.

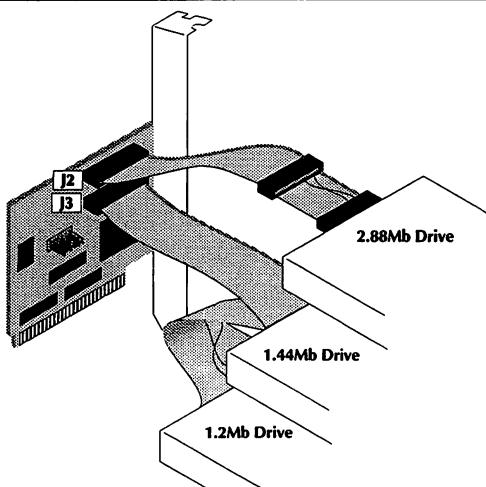
 A 2.88Mb drive may be connected to the end or the middle of the cable connected to J2. A 2.88Mb drive may not be connected to connector J3.

 When connecting a 2.88Mb drive to a cable, it is recommended the pin type (not edge-card) connector be used. Some drives do not function properly when connected to an edge-card adaptor. See page 2-4 concerning "Smart" drives for further information.

Installing the MCT-FDC-ED

The following information outlines a common installation of a 1.2Mb drive as A:, a 1.44Mb as B:, and a 2.88Mb drive as D:, into a system operating MS-DOS 5.0 with a single hard drive C:.

The 1.2Mb and 1.44Mb drives are connected to J3. The 2.88Mb drive is connected to J2. See the illustration below.



Insert the MCT-FDC-ED into the bus slot, using a slight rocking motion if necessary to firmly seat the "gold-fingers" in the slot. Connect the end of the cable attached to J3 to the 1.2Mb drive and the middle of the cable to the 1.44Mb drive. Attach the end of the cable connected to J2 to the 2.88Mb drive. Be sure the marked edge of all cabling corresponds to pin 1 on each drive's connector.

Connect power to the drives.

Close the case and re-connect all the cables previously disconnected. Plug the system cord back into its power source. Turn on the system.

Using the Setup Routine

During the system boot process, a BIOS message coming from the MCT-FDC-ED will display. Be prepared to press the <INSERT> key.

**GSI model 11 universal diskette BIOS at DC00
Serial No xxxxxx**

Press INSERT to change diskette configuration-secondary controller

Press the <INSERT> key. A screen listing the possible floppy drive configurations will appear.

GSI diskette configuration setup - secondary controller

Do you want to change settings?

DRIVE TYPES

0 = absent

NORMAL SPEED

1= 360KB

2= 1.2MB

3= 720KB

4=1.44MB

5=2.88MB EHD-H

6=2.88MB EHD-L

7=2.88MB EHD-N

FAST(600/720RPM)

11=360KB

12=1.2MB

13=720KB

14=1.44MB

Existing settings (drive/type/cable-position) DOS 5.0

When prompted "**Do you want to change settings?** ", press **<Y>** and **<Enter>**.

You will then be prompted "**Choose drive A: - Is drive with Light ON your choice?**". The drive light on the 1.2Mb drive should be on designating it as the A: drive. Press **<Y>** and **<Enter>**.



If you want any of the other three drives installed to be the A: drive, you may specify it at this point by pressing **<N>** and **<Enter>**. The next drive in the chain (1.44Mb) drive light will go on next; then the 2.88Mb drive light. When the light for the drive you wish to be designated as A: goes on, press **<Y>** and **<Enter>**.

You will next be prompted to "**Enter the type for drive A:** ". Select the corresponding number of the type of drive found on the screen.

GSI diskette configuration setup - secondary controller

Enter type for drive A:__

DRIVE TYPES

0 = absent

NORMAL SPEED

1= 360KB

2= 1.2MB

3= 720KB

4=1.44MB

5=2.88MB EHD-H

6=2.88MB EHD-L

7=2.88MB EHD-L

FAST(600/720RPM)

11=360KB

12=1.2MB

13=720KB

14=1.44MB

Existing settings (drive/type/cable-position) DOS 5.0

Press **<2>** and **<Enter>** for a 1.2Mb normal speed floppy drive.

You will then be prompted "**Choose drive B: - Is drive with Light ON your choice? __**". The drive light on the 1.44Mb drive should be on designating it as the B: drive. Press **<Y>** and **<Enter>**.

You will next be prompted to "**Enter the type for drive B: __**". Select the corresponding number of the type of drive found on the screen. Press **<4>** and **<Enter>** for a 1.44Mb normal speed floppy drive.

You will then be prompted "**Choose drive 3: - Is drive with Light ON your choice? __**". The drive light on the 2.88Mb drive should be on designating it as Drive 3. Press **<Y>** and **<Enter>**.

| OEM | Model | Drive Type(s) | GSI BIOS Drive Type |
|------------|--------------|---------------|---------------------|
| Chion | FZ-358 | EHD-H | 5 |
| Citizen | OSDF | EHD-H | 5 |
| Epson | SMD-1060 | EHD-H/L | 5 |
| Mitsubishi | MF356C-752V | EHD-N | 7 |
| Mitsumi | D352T2 | EHD-H | 5 |
| Sony | MP-F40W-16 | EHD-L | 7 |
| TEAC | FD-235J-983X | EHD-H/L | 5 |
| TEAC | FD-235J-985X | EHD-H/L | 5 |
| Toshiba | PD211 | EHD-N | 7 |
| Y-E Data | YD-742 | EHD-H | 5 |

You will next be prompted to "**Enter the type for drive 3: __**". Select the corresponding number of the type of drive found on the screen. Press **<5>** and **<Enter>** for a 2.88Mb EHD-H floppy drive. (See page 2-2 for more information on choosing a 2.88Mb drive type).

You will next be prompted "**Will you use DOS 3, DOS 4 or DRDOS 6.0 (y/n) ?**". Since our sample installation uses DOS 5.0, press **<N>** and **<Enter>**.

You will next be prompted "Save new choices ? ". Press <Y> and <Enter>.

The screen will now display:

GSI diskette configuration setup - secondary controller

Will you use DOS 3, DOS 4 or DRDOS 6.0 (y/n) ? n

DRIVE TYPES

Save new choices ? y

0 = absent

NORMAL SPEED

Updating - please wait

1= 360KB

2= 1.2MB

3=720KB

4=1.44MB

5=2.88MB EHD-H

6=2.88MB EHD-L

7=2.88MB EHD-N

FAST(600/720RPM)

11=360KB

12=1.2MB

13=720KB

14=1.44MB

Existing settings (drive/type/cable-position) DOS 5.0

A: 2 Reg-End

B: 4 Reg-Ctr

3: 5 288-End

The 2.88Mb drive will be designated as D: by DOS 5.0. When the system reboots, try accessing the D: drive by typing <D:> at the DOS prompt.

Be sure a diskette is in the drive or you may receive the error message "Drive not ready...".

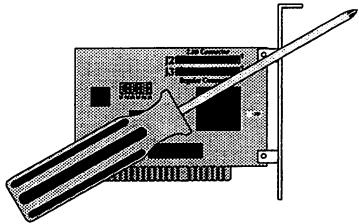
Connecting Tape Drives

The MCT-FDC-ED can support tape drives that use the QIC-80 format and operate from the standard floppy disk controller interface. The MCT-FDC-ED must be configured as a Primary floppy controller to use tape drives connected to it. This will require disabling the floppy controller portion of your current floppy/hard controller if necessary. Refer to your floppy/hard controller documentation for information on disabling the floppy controller.

The tape drive should only be connected to the cable attached to J3 (for regular floppy drives).

Refer to your tape drive documentation for information on configuring the tape drive for connection to a floppy controller. Some tape drives do not require any setting for drive select and use software to locate the tape drive.

NOTES



Technical Reference and Troubleshooting

Contents Floppy Drives Supported
Formatting Diskettes
Microsoft Windows and the MCT-FDC-ED
Technical Reference

The drives described as "High-Speed" are not generally used and found most often in tape duplicating equipment.

Formatting Diskettes in a 2.88Mb Drive

To format a 3.5" diskette of any capacity in a 2.88Mb drive, use the MS-DOS command FORMAT A: (Drive A: is the 2.88Mb drive in the following examples). For diskettes smaller than the maximum capacity (i.e., 2.88Mb), you must tell MS-DOS what density, or size, of diskette you will be formatting. Refer to your MS-DOS documentation for the proper syntax for formatting drives of specific densities.

Microsoft Windows and the MCT-FDC-ED

The MCT-FDC-ED is compatible with Microsoft Windows 3.1 in all modes and for all floppy services. You may need to check your SYSTEM.INI file under the heading [386Enh] for the following line:

DMABUFFERSIZE=18 (or higher)

Refer to your Windows 3.1 documentation for information on entering this line in the SYSTEM.INI if it is not present.

Microsoft Windows 3.0 will work with the MCT-FDC-ED controller, but will not support the 2.88Mb density. It does support both 720K/1.44Mb densities.

On floppy only systems, the third and fourth floppy drives will be C: and D:. On systems with hard drives, the third and fourth floppy drives will get drive letters assigned as follows:

Floppy Drive Letter Assignments by MS-DOS

1. Under MS-DOS 5.0, the next two letters after the hard drive letter(s).
2. Under MS-DOS 3.30 or 4.01 or DRDOS 6.0, Drive C: and D:, respectively.

The MCT-FDC-ED Setup Utility does ask for the level of MS-DOS or DRDOS being used.

If you are using MS-DOS 3.30/4.01 or DRDOS and want to keep your hard drive letters as previously assigned, refer to your operating system documentation for instructions on altering your CONFIG.SYS file.

A typical CONFIG.SYS line placing a 2.88Mb drive after existing hard drives is:

DEVICE=DRIVER.SYS /d:2 /c /f:7 /s:36 /t:80

The file DRIVER.SYS should be copied from the DOS directory into the root directory of your hard drive. The above line will make DOS 3.30/4.01 or DRDOS 6.0 assign Hard Drive = C: (and D: etc). For more information on DRIVER.SYS, refer to your operating system documentation.

2.88Mb "Smart" Drives

If you are using a "self-sense" 2.88Mb drive which reports to the floppy controller what type of diskette is currently in the drive, observe the following rules:

1. Use the cables supplied with the MCT-FDC-ED. Do not use a pin-header to card-edge adaptor to connect the 2.88Mb drive to its cable.
2. Do not connect any other type of drive (e.g., 360K, 720K, 1.2Mb or 1.44Mb) on the same cable as the media-reporting 2.88Mb drive.

If one of the above rules is not followed, the 2.88Mb drive will always report that it contains a 720K diskette or no diskette. If you need to break one of the above rules, please use the MCT-FDC-ED Setup process to declare the drive a non-reporting drive (Type 7).

Refer to your drive's documentation to determine if your hard drive is "self-sense".

Technical Specifications

| | | |
|-----------------------------|------|--------------------------------|
| Drive Connectors | Size | 4.00" (W) x 2.50" (L) |
| | Bus | 8-bit or 16-bit ISA compatible |
| | | 1- 34 pin 360K-1.44Mb support |
| | | 1- 34 pin 360K-2.88Mb support |
| BIOS Addresses | | C8000 - DC000 |
| Floppy Configuration | | Primary or Secondary |



MCT-FDC-ED

Revision 2.0

3/3/93

© 1993 MODULAR CIRCUIT TECHNOLOGY

MMFDCED/20